

## **Abstract**

**Title:** Strategy of postural stabilisation using unstable surface and water barrel.

**Objectives:** The aim of this study is to investigate the level of muscle activation of chosen muscles during lunge on unstable surface or with using water barrel. Investigation of the postural strategy used during lunge on unstable surface or with the water barrel and creation of methodology for measurement and data analysis.

**Methods:** In this pilot study, there were picked 5 people (athletes). Data for outcomes were used from 3 athletes. The measurement of level of muscle activation were done by surface electromyography over gluteus medius muscle and musculus multifidii bilaterally. For data processing was used software Origin 2012. Postural stability was measured through force plates by Kistler and gained data were processed by using software programmes Bioware, MS Excel and Matlab. For data analysis from EMG measurement was used simple comparison of outcomes. Stabilometry outcomes were analysed by statistical method t-test.

**Results:** The results indicate greater level of measured trunk muscles activation during lunge with aquabag than lunge on unstable surface. Another thing which was found is that there was higher activation of Gluteus medius muscle on dominant lower extremity when performing lunge on unstable surface rather than with aquabag. Also was found that the process of stabilisation is different comparing lunge on unstable surface and lunge with aquabag.

**Keywords:** Process of postural stabilisation, Kistler, surface electromyography, physiotherapy, rehabilitation, unstable surface, stabilometry, methodology